LSI-11 System.

PCC 77

Summa/11 product summary

PRODUCT DESCRIPTION

INTERPRING'S SUMMA/11 MICROCOMPUTER SYSTEM

The Summa/11 is an LSI-11 based personal computing system designed for the hobbyist or small business that wants a powerful, general-purpose microcomputer in a single package. Combining the 16-bit architecture of DEC's LSI-11 with interactive software, extended BASIC, and user-oriented, preprogrammed applications, the Summa/11 is the most powerful microcomputer system available today.

Hardware:

The Summa/11 is built around the Digital Equipment Corporation's LSI-11 central processor, delivering the world's most popular 16-bit architecture at the price of a microprocessor. The use of the LSI-11 provides the following features:

* an instruction repertoire that is larger and more flexible that other microprocessor instruction sets, containing the 400-plus instructions of the basic PDP-11/40
* 16-bit word size
* vectored automatic priority interrupt logic
* real-time clock
* power fail/autostart
* an application oriented bus structure which handles input output and memory operations quickly and efficiently
* off-the-shelf interface from a variety of sources for plug-in expansion
* resident firmware which supports an octal debugger, ASCII console routines, and a bootstrap loader
* membership in DECUS, the Digital Equipment Corporation's User Society and access to the DECUS library of PDP-11 application programs.

The Summa/11 complements these capabilities with 24,576 bytes of fast, random access semiconductor memory, a 256,256 byte capacity diskette drive for mass storage, a terminal interface, and an enclosure and power supply (including lights, switches, and fan). This totally integrated system furnishes the versatility of a general-purpose computer, the power of a minicomputer,

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and the speed inherent in a 16-bit architecture--at a fraction of the cost of its equals. The Summa/11: inexpensive, immensely capable, and ready to use.

Components:

The Summa/11 has been designed to accept a wide range of modular add-on components. The basic configuration can be expanded by choosing from among the following:

* RAM, PROM/ROM, and core memories
* series and parallel i/o interfaces
* additional disk drives
* 16-channel analog-to-digital and 4-line digital-to-analog convertors
* video terminals, printing terminals, and line printer
* 4-channel instrument controller
* video, graphic and printing terminals

Software:

Omni/OS, the Summa/11 operating system, is a strongly user-oriented system aimed at making the full power of the LSI-11 processor available to programmers and applications users alike. It includes:

* a string processor for general data manipulation, with an automatic virtual string space capability to swap strings onto the disk when not in use
* a File System for disk-based mass storage, allowing up to 200 files per diskette, specified by 18-character file names
* Macro Assembler which interprets the full 400-plus instructions accepted by the LSI-11 processor
* a Monitor Function Library that contains base conversion, arithmetic, and input/output routines
* a File Mnanger Program for obtaining directories and performing routine file manipulations easily
* a Character-Oriented Text Editor for creating data, program, and text files and revising previous files
* a Text Formatter for printing out text in an attractive format
* a monitor level calculator including arithmetic operations and automatic base conversions

Using Omni/OS, OmniBASIC has been created and included with the Summa/11 package. OmniBASIC is Interpring's extended implementation of Dartmouth-standard BASIC, and has the following characteristics:

* immediate syntax checking with extensive diagnostic messages
* direct execution of all commands and most statements
* trace mode, enabling the user to monitor the flow of an executing program

* up to 15 concurrently open disk files

* virtual disk integer, floating point, and string arrays with up to 7 dimensions and 32,767 elements per dimension.

* statements which enable structured programming, including IF-THEN-ELSE WHILE, UNTIL, and the nested IF-THEN-ELSE statements

* user-defined functions of up to 7 arguments

* automatic program swapping onto disk to allow almost unlimited program size

* 32-bit integer and floating point arithmetic

* character strings of any length

* a provision for storing pre-interpreted programs to reduce execution time

Also included with the Summa/11 is a complete set of diagnostic programs for localizing hardware problems, a BASIC tutorial, an operating system tutorial, a program to maintain mailing lists, and a program to balance a checkbook. In addition, an entertainment diskette is provided that includes 101 BASIC games, the Story game and Life. All Summa/11 owners will receive free software updates for one year.

In short, the Summa/11 is an ideal computer system for both the novice and the experienced computer user. The beginner will find it easy to use, yet powerful enough to grow with; the experienced computer user will appreciate the advanced software and the state-of-the-art microcomputer hardware. Minicomputer power at a microcomputer price: the Summa/11 by The Interpring Group.

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Summa/11 software bulletin

OmniBASIC

* Virtual Program Space
* Virtual Arrays
* Virtual Strings
* Trace Mode
* 32-Bit Integer Arithmetic
* Floating Point
* 7-Dimensional Arrays
* 15 Simultaneously Open Disk Files

Interpring's OmniBASIC is a powerful, convenient extension of the features contained in the original Dartmouth BASIC, allowing interactive program development and debugging in one of the most popular and widely used programming languages. Statements are translated as they are entered, with detailed diagnostic messages locating the exact cause of any syntax errors. To speed program debugging, direct execution mode permits the user to examine variable values while program execution is halted. Direct execution also makes OmniBASIC into a sophisticated desk calculator for instant computations.

Trace mode provides an excellent debugging tool which simplifies the task of analyzing iterations and conditional branches by allowing the user to follow actual execution step-by-step. The program commands are typed out as they are being executed and variables and expressions are evaluated and listed at each step. In addition, the user can tag selected program variables so that any change in value causes an execution break.

The IF-THEN-ELSE construction allows the use of structured programming techniques with no limitation on the depth of nesting. (In nesting of other types of statements, the only limitation on depth is the amount of memory available for stack space.) Multiple statements can be inserted in both the THEN and the ELSE clauses. Multiple statements in this and other cases can share the same line by using either the backslash (\) or the colon (:) as a separator. User defined functions can take up to 15 arguments of any data-type and the use of the FNEND statement as a terminator enables the user to define functions that extend over multiple lines.

Program length is not limited by the size of internal memory, since any portions of a program that are not currently being executed will be swapped onto the disk automatically if more memory space is needed. This facility also enables a virtually unlimted space for string storage.

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Arrays of any data type may have up to 7 dimensions, with the number of elements limited only by the 256,256 byte storage capacity of the disk. Data stored as strings of characters can contain any ASCII character. Strings are limited in length only by the amount of available memory, and in number only by the amount of storage on the disk, since they too, will be moved onto the disk when they are not being processed.

Data stored as integers can range in value from -32,768 to 32,767; real numbers can range in magnitude from approximately 10^{-38} to 10^{37} with more than 6 digits of precision; scaled integers have a range of ±2,147,483,647 with an implied decimal point allowing from 0 to 6 decimal positions. Integer representation saves storage space and execution time; floating point allows computations with an extremely wide range of values; and scaled integer assures complete accuracy in representing dollars and cents, to satisfy the needs of most business and personal applications.

OmniBASIC contains a full complement of trigonometric, matrix, algebraic, and system functions. The virtual strings are provided with powerful string-handling functions such as CVT, which enables the user to convert string-to-string, string-to-integer, and integer-to-string, and MID, which allows him to copy a substring of specified length from anywhere in a previously-defined string. A complete set of logical operators (e.g. OR, IMP), relational operators (e.g. >, >=,==), arithmetic operators (+, -, *, **, ↑), and string operators (+,&) is also included in OmniBASIC.

OmniBASIC Commands: APPEND, BYE, CAT, CLEAR, CONT, DELETE, LIST, NEW, OLD, RENAME, REPLACE, RUN, SAVE, SCRATCH, TRACE, UNSAVE, UNTRACE

OmniBASIC Statements: CHAIN, CHANGE, CLOSE, DATA, DEF FN, DIM, END, FNEND, FOR-TO-STEP-UNTIL, FOR-TO-STEP-WHILE, FOR-TO-STEP, GOSUB, GO TO, IF-THEN-ELSE, INPUT, INPUT LINE, KILL, LET, MAT, NAME AS, ON ERROR GOTO, ON-GOSUB, ON-GOTO, OPEN, PRINT, RANDOMIZE, READ, REM, RESTORE, RESUME, RETURN, SLEEP, STOP, WAIT

All OmniBASIC Commands except CHAIN, DATA, DEF, DIM, END, FNEND, and REM can be executed in immediate mode.

Mathematical Functions: ABS, ATN, COS, EXP, FIX, INT, LOG, LOG10, PI, RND, SGN, SIN, SQR, TAN

Matrix Functions: DET, IDN, INV, TRN, ZER

Print Functions: TAB, POS

String Functions: ASCII, CHR$, CVT, INSTR, LEFT, LEN, MID, NUM$, RIGHT, SPACE$, STRING$, TRM$, VAL, XLATE

System Functions: DATE, ERL, ERCD, RND, SWAP%, TIME

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Summa/11 price list

Prices effective August 22, 1977. Terms: prepaid with order or cash on delivery. A 3% discount is given (on most items) when payment accompanies order, as reflected in the Cash Price. All items shipped prepaid except the terminals and line printer, which are FOB Watertown.

SYSTEMS

List Price	Cash Price	
$3995	$3875	Summa/11 Microcomputer System, including: LSI-11 central processor 24,576 bytes random access semiconductor memory Flexible diskette drive and controller Serial or parallel terminal interface 22 ampere heavy duty power supply Enclosure, front panel controls, and fan Omni/OS diskette-based operating system OmniBASIC 101 BASIC games
5895	5718	Summa/11, with all features listed above, plus DECscope video terminal

COMPONENTS

850	824	LSI-11 microcomputer board (includes 8,192 bytes memory)
149	144	Extended arithmetic element (floating point arithmetic, integer multiply and divide)
175	169	Backplane/card guide assembly
		Memory:
570	553	8,192 bytes random access semiconductor memory
975	945	8,192 bytes magnetic core memor-
795	771	16,384 bytes random access semiconductor memory (300 ns access time, 700 ns cycle time for 16-bit word
1095	1062	32,768 bytes random access semiconductor memory (300 ns access time, 700 ns cycle time for 16-bit word
160	155	8,192 bytes fusible-link PROM memory (without PROM chips)
40	38	Fusible-link PROM chips (512-by-4 bits)

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		Mass Storage:
$ 895	$ 868	Diskette controller (supports 2 drives)
500	485	Diskette drive (256,256 byte capacity)
		Interfaces:
200	194	Serial line interface (11 selectable band rates)
200	194	Parallel line interface (16 data line plus 16 control lines)
900	873	Analog-to-digital converter (16 channel, 12-bit)
800	776	Digital-to-analog converter (4 device capacity)
680	659	Instrument bus interface (4 device capacity)
		Terminals:
1995	1935	DECscope video terminal with: 24 80 character lines Full 96-character ASCII set 63 key keyboard Numeric keypad EIA or 20-ma current loop interface
2495	2420	DECgraphic video terminal, with: all features of DECscope 512-by-256 point plotting 2 simultaneous graphs
3595	3487	DECgraphic video terminal with hard copy option includes electrostatic printer to copy contents of screen, including graphs
1650	1600	DECwriter matrix printing terminal 132 columns Multiple-part forms 96-character ASCII set Optional numeric pad
*	*	Diablo HyType II printing terminal
		Line Printer:
4995	4845	200 line per minute, 132 column line printer featuring: 96-character ASCII set Plotting mode Double-height characters Optional 64-character alternate character set

* Contact Interpring for pricing and availability.

Summa/11 information request

CUSTOMER SURVEY and INFORMATION REQUEST

Please take a few minutes to fill out your name and address and answer the questions below. We will add your name to our mailing list and send more product information as it becomes available. Thank you very much.

NAME: MR. MS. _____

ADDRESS: _____

CITY, STATE: _____ ZIP: _____

PHONE NUMBER: _____ Is this a business phone?___ Home phone?___

YOUR BUSINESS OR PROFESSION:

__Computer Industry
__Medical/Dental/Law (circle one)
__Engineering
__Education
__Sales/Marketing
__Accounting
__Student
__Other: _____

DO YOU CURRENTLY USE A COMPUTER AT WORK?

__No __Yes What Kind?_____

DO YOU OWN A HOME COMPUTER SYSTEM?

__No __Yes What Kind?_____

IF YOU WERE TO PURCHASE ONE IN THE NEAR FUTURE, HOW MUCH WOULD YOU EXPECT IT TO COST?_____

ARE YOU INTERESTED IN THE SUMMA/11 FOR:

__Ease of use
__Wide range of applications available
__Large instruction set
__Other software features:
_____
__Use of the LSI-11 processor
__Inclusion of the floppy disk
__Large assortment of peripherals
__Other hardware features:
_____

WHAT PROGRAMS DO YOU FIND MOST INTERESTING?

__Personal record-keeping, checkbook balancing, tax form preparation, etc.
__Maintaining lists, files; text preparation, word processing
__Monitoring and controlling the home environment
__Education
__Recreation
__Small business
__Other: _____

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WHAT LANGUAGES WOULD YOU LIKE TO SEE IN THE SUMMA/11:

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